

REMARKS

Claims 1-31 are pending in the application. Favorable reconsideration of the application, as amended, is respectfully requested.

Figs. 1-3 of the drawings have been objected to as not including a legend such as "Prior Art". In response, Figs. 1-3 have been amended to include the label "Related Art". Withdrawal of the objection is respectfully requested.

I. ALLOWABLE SUBJECT MATTER

Applicant acknowledges with appreciation the allowance of claims 19-29. Applicant notes, however, that the Examiner indicates that claims 24-29 have been found allowed due to their dependency on claim 22. As pointed out on page 5 of applicants' previous response, claims 24-29 actually depend from claim 1 rather than claim 22. Clarification is respectfully requested.

II. REJECTION OF CLAIMS 1-31 UNDER 35 USC §112, 2ND ¶

Claims 1-31 are rejected under 35 USC §112, second paragraph, as being indefinite. This rejection is respectfully traversed for at least the following reasons.

The Examiner contends that the claims are incomplete in omitting essential structural cooperative relationships among the elements. Specifically, the Examiner contends that claims 1, 19 and 22 fail to recite the order or arrangement of the layers.

Applicant respectfully submits that claims 1, 19 and 22 do provide adequate structural relationship, particularly insofar as the order or arrangement of the layers. For example, claim 1 recites an n-doped cladding region and a p-doped cladding region. An optical guiding region is disposed *between* the n-doped cladding region and the p-doped cladding region. An active region is disposed *within* the optical guiding region. Further, at least one optical confinement region is disposed *between* the active region and at least one of the cladding regions.

As a result, applicant respectfully submits that the particular order of the respective regions is clear with respect to claim 1 and corresponding claims 19 and 22. Withdrawal of the rejection is respectfully requested.

III. REJECTIONS OF CLAIMS 1-18 AND 30-31 UNDER 35 USC §103(a)

Claims 1, 2, 4, 8-12, 18 and 30-31 are rejected under 35 USC §103(a) based on *Hayakawa* in view of *Hiroshima et al.* Claims 3 and 5 are rejected under 35 USC §103(a) based on *Hayakawa* in view of *Kidoguchi et al.* Claims 6 and 7 are rejected 35 USC §103(a) based on *Hayakawa* in view of *Copeland*. Claims 13-17 are rejected under 35 USC §103(a) based on *Hayakawa* in view of *Hiroshima et al.* Each of these rejections is respectfully traversed for at least the following reasons.

Claim 1 defines a laser device which further includes at least one optical confinement layer disposed between the active region and at least one of the cladding regions. None of the references taken alone or in combination teach or suggest such feature.

An advantage of a laser device in accordance with the present invention, that is a laser device which further includes at least one optical confinement layer disposed between the active region and at least one of the cladding regions, is improved optical confinement may be achieved. By providing an optical confinement layer with a lower refractive index than the cladding regions, wherein the confinement layer is disposed between the active region and at least one of the cladding regions, improved optical confinement may be achieved. This thereby reduces the penetration of the optical field into the cladding region beyond the optical confinement region and concentrates the optical field in the active region.

Such effects will reduce the threshold current of the laser device. Furthermore, reducing the penetration of the optical field into the cladding region will improve the circularity of the far field image. (See, e.g., Spec., p. 7, last paragraph to p. 8, first paragraph).

Beginning in the middle of page 4 of the Office Action, the Examiner notes that although *Hayakawa* does not teach a layer with a low refractive index, the Examiner contends it would have been obvious to combine the teachings of *Hiroshima* insofar as including an optical confinement layer having a smaller refractive index than the cladding layer (See, e.g., abstract).

Applicant notes, on the other hand, that *Hiroshima et al.* describes a laser device. As is shown in Fig. 1, an n-type cladding layer 3 and a p-type cladding layer 7 are disposed on opposite sides of an active layer 5 positioned between guiding layers 4 and 6. The device further includes a confinement layer 10 which is disposed on top of the p-type cladding layer 7.

Hiroshima et al. describes the optical confinement layer 10 as having a refractive index which is smaller than the p-type cladding layer 7. (See, e.g., column 9, lines 55-64). Applicant notes in this case, however, that the optical confinement layer in *Hiroshima et al.* is not located between the active region 5 and one of the cladding layer (e.g., 7). Thus, *Hiroshima et al.* does not teach or suggest a confinement layer having a lower refractive index than that of the cladding region and located between the active region and the cladding region as recited in claim 1 of the present application.

Thus, there is a structural distinction between the present invention and the device described in *Hiroshima et al.* In this sense, *Hiroshima et al.* is similar to *Hayakawa* in that neither reference teaches an optical confinement region disposed between the active region and at least one of the cladding regions and having a lower refractive index than the at least one of the cladding regions as recited in claim 1. Both *Hayakawa* and *Hiroshima et al.* teach that the refractive index of a confinement region located between the active region and the cladding region is greater than or equal to the cladding region as argued in applicant's previous response. (See, e.g., page 5).

Consequently, *Hiroshima et al.* does not make up for the deficiencies of *Hayakawa* with respect to claim 1. Withdrawal of the rejection in relation to claim 1 is respectfully requested.

Regarding the remaining dependent claims and the other secondary/tertiary references, none of such references make up for the deficiencies in *Hayakawa* and *Hiroshima et al.* Thus, withdrawal of the rejections is respectfully requested.

IV. CONCLUSION

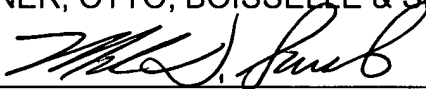
Accordingly, all claims 1-31 are believed to be allowable and the application is believed to be in condition for allowance. A prompt action to such end is earnestly solicited.

Should the Examiner feel that a telephone interview would be helpful to facilitate favorable prosecution of the above-identified application, the Examiner is invited to contact the undersigned at the telephone number provided below.

Should any fees be due as a result of the filing of this response, the Commissioner is hereby authorized to charge the Deposit Account No. 18-0988.

Respectfully submitted,

RENNER, OTTO, BOISSELLE & SKLAR, LLP



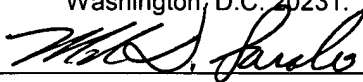
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October 31, 2002

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